Dario Gjorgjevski

Curriculum vitæ

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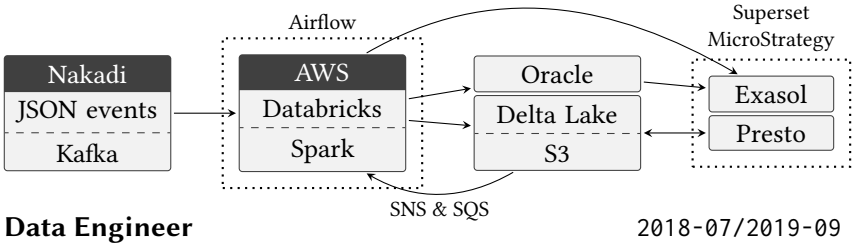
1 Experience

Data Engineer 2019-09/
Zalando SE Berlin, DE

Part of the team providing Zalando SE's *core data*—articles and sales—in near real-time. (Including 24 × 7 responsibilities starting 2020-08.)



Data Engineer 2018-07/2019-09
SO1 GmbH Berlin, DE

- Responsible for a self-hosted Vertica on Azure:
  - Defined *data vault* and *dimensional* models of client data.
  - Developed ETL processes to ingest data from Blob Storage, Kafka, and SFTP servers.
  - Wrote and optimized queries to monitor KPIs and to compute features for machine learning models.
  - Implemented user-defined extensions to evaluate machine learning models (e.g., LightGBM) directly inside Vertica.
- Translated business rules to *minimum cost maximum flow* problems, yielding 15 % greater value than previous greedy algorithms.
- Developed a microservice for top-*k* nearest neighbor queries in real time by utilizing *locality-sensitive hashing* with *MinHash* signatures.
- Conducted technical interviews for data engineers.

Data Scientist 2017-11/2018-06
Infinite Analytics, Inc. Skopje, MK

- Scraped clients' websites using Scrapy.
- Developed a Spark application to compute and visualize *actionable insights* using over 2 billion facts about 50 million customers.

Research Intern 2017-07/09
EPFL, LCA2 Lausanne, CH

- Implemented software agents with `asyncio` and Mininet in T-RECS.
- Modeled smart grid power traces at a timescale of 20 ms using approaches based on wavelets and long-range dependence.
- Increased the resolution of mean-aggregated measurements using deep learning for super-resolution.

Research Intern 2016-06/09
EPFL, LASEC Lausanne, CH

Studied and improved upon the complexity of state-of-the-art solving algorithms for the *Learning With Errors* (LWE) problem.

2 Strengths

2.1 Theoretical Knowledge

Algorithms Data structures	Probability theory Statistics
Databases Distributed systems Big data	Linear algebra
	Cryptography

Additional academic exposure to *compiler design* and *programming language theory* along with various Lisps, Haskell, and Standard ML.

2.2 Hands-On Experience

Python R incl. `Tidyverse` SQL & PL/SQL Scala	GNU/Linux AWS • EC2 • S3 • Lambda • SNS & SQS • CloudFormation Databricks
Spark SciPy stack Kafka ELK stack Airflow Redis	
LaTeX incl. TikZ/PGF	Computer algebra

Adept at working in *agile teams* using Git for (distributed) version control, and Jenkins for CI/CD.

3 Honors

- Graduated *summa cum laude* with a perfect GPA from the Ss. Cyril and Methodius University.
- Best student paper for [2].
- Scholarships to attend the 2016 and 2017 editions of the Summer School on Real-World Crypto and Privacy held in Šibenik, Croatia.
- Dean's list—awarded to the top 2.5 % students of Computer Science & Engineering—at the Ss. Cyril and Methodius University.

4 Education

Computer Science & Engineering Class of 2017
Ss. Cyril and Methodius University Skopje, MK
Thesis: "Error-Correcting Codes in the Rank Metric" [1].
Publications: [2, 3].
GPA of 10.00; scale from 5 (E/F) to 10 (A).
Earned 240 ECTS credits. As a senior, conducted computational exercises, homework assignments, and exams in:

Linear Algebra Least squares, linear codes, and low-rank approximations in SageMath and Mathematica®.

Statistics Data visualization, Monte Carlo methods, inference, hypothesis testing, and linear regression in R.

Databases ER models, relational algebra, and ANSI SQL.

Presentations available at /Presentations.

Over 40 *Massive Open Online Courses* on topics related to game theory, probabilistic graphical models, Bayesian statistics, combinatorics, automata and formal languages, mathematical optimization, etc.

Certifications available at /Personal/tree/master/Certifications.

5 Theses

[1] **Dario Gjorgjevski**. "Error-Correcting Codes in the Rank Metric." With Applications to Cryptography. Bachelor's Thesis. Under sup. of Simona Samardjiska. Ss. Cyril and Methodius University, Jan. 24, 2018. eprint: http://diplomski.finki.ukim.mk/Upload/PublicFile/1814.

6 Publications

[2] **Dario Gjorgjevski**. "Combining LWE-Solving Algorithms." In: *Proceedings of the 14th International Conference on Informatics and Information Technologies* (Hotel Bistra, Mavrovo, Macedonia, Apr. 7–9, 2017). Ed. by Aleksandra Popovska–Mitrovikj, Biljana Tojtovska, and Kire Trivodaliev. 2017, pp. 165–170. ISBN: 978-608-4699-07-1. eprint: http://ciit.finki.ukim.mk/data/papers/CIIT2017.pdf.

[3] **Dario Gjorgjevski** and Dejan Gjorgjevikj. "Using Distributed Representations to Identify Genders and Age Groups of Twitter Users." In: *Proceedings of the 15th International Conference on Informatics and Information Technologies* (Hotel Bistra, Mavrovo, Macedonia, Apr. 20–22, 2018). Ed. by Nataša Ilievska and Georgina Mirčeva. 2018, pp. 2–7. ISBN: 978-608-4699-08-8. eprint: http://ciit.finki.ukim.mk/data/papers/CIIT2018.pdf.

7 Projects

C-like language → PostScript transpiler
Transpiler implemented in Flex and GNU Bison to translate a C-like language for *turtle graphics* to PostScript.

Trusted timestamping
Flask application for a simple file-sharing service which also provides *trusted timestamps* as specified in RFC3161 and implemented in OpenSSL.

AS-level robustness of the Internet over time
Simulation of random and targeted attacks on the Internet topology. Jupyter Notebook and source code available at /Internet_Robustness.

Predicting readmission of diabetic patients

- Learning from imbalanced data using `mlr`.
- *Fully reproducible reporting* using `knitr`.

Report available at /Diabetic_Patients.

Survey of the MinRank problem
SageMath implementations of:

- Algorithms for solving MinRank; and a
- Zero-knowledge authentication protocol based on MinRank.

Report available at /MinRank.

Checksum verification on LPC1769
C program to verify MD5 checksums of payloads stored on an LPC1769 microcontroller. Won prize for highest throughput. Source code available at /DMA_Workshop.

Substitution ciphers for Macedonian text

- Create substitution ciphers; and
- Break substitution ciphers using Markov chain Monte Carlo (MCMC) methods based on unigram and bigram frequencies.

Mathematica® Notebook and corpus with Macedonian text suitable for frequency analysis available at /Macedonian_Substitution_Ciphers.